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## II. Solution by G. B. M. ZERR, A. M., Ph. D., Texarkana, Arkansas, and the PROPOSER.

Let  $t$  = number of seconds,  $n$  = number of miles per hour.

$\therefore 5280n/3600 = 22n/15$  feet per second = speed of train. Also in  $t$  seconds train goes  $30n$  feet.

$\therefore 30n/t$  = number of feet in one second.

$\therefore 30n/t = 22n/15$ .  $\therefore t = 20\frac{5}{11}$  seconds.

## 78. Proposed by NELSON S. RORAY, South Jersey Institute, Bridgeton, New Jersey.

Solve by pure arithmetic, no algebraic symbols: A Texan farmer owns 5169 cattle; there are 3 times as many horses as cows, plus 569, and 4 times as many cows as sheep, minus 126; how many has he of each? [From *Brooks' Higher Arithmetic*.]

Solution by G. B. M. ZERR, A. M., Ph. D., Texarkana, Arkansas, and J. C. CORBIN, Principal of Schools, Pine Bluff, Arkansas.

$5169 + 126 - 569 = 4726$  = number of cattle when there are 4 times as many cows as sheep and 3 times as many horses as cows.

Every time he takes 1 sheep, he takes 4 cows and 12 horses, or 17 in all.

$\therefore$  he has as many lots of 1 sheep, 4 cows, 12 horses, as 17 is contained in 4726.  $\therefore 4726 \div 17 = 278$ .

$\therefore 278 \times 1$  = number of sheep = 278

$278 \times 4 - 126$  = number of cows = 986

$278 \times 12 + 569$  = number of horses = 3905

Total = 5169

This problem was solved with a different view of its enunciation by Frederic R. Honey, and O. S. Westcott, A. M., Sc. D., Principal North Division High School, Chicago, Illinois.

[NOTE. P. S. Berg and H. C. Wilkes should each have received credit in the last number for solving problems 75 and 76. EDITOR.]

## ALGEBRA.

Conducted by J. M. COLAW, Monterey, Va. All contributions to this department should be sent to him.

## SOLUTIONS OF PROBLEMS.

70. Proposed by J. A. CALDERHEAD, A. B., Professor of Mathematics in Curry University, Pittsburgh, Pennsylvania.

Given  $\sqrt[3]{a+x} + \sqrt[3]{a-x} = \sqrt[3]{c}$  to find  $x$ .

I. Solution by J. MARCAS BOORMAN, Consultative Mechanician, Counselor at Law, Inventor, Etc., Hewlett, Long Island, New York; EDWARD R. ROBBINS, Master in Mathematics and Physics in Lawrenceville School, Lawrenceville, New Jersey; E. L. SHERWOOD, A. M., Principal of City Schools, West Point, Mississippi; O. W. ANTHONY, M. Sc., Columbian University, Washington, D. C.; A. H. HOLMES, Brunswick, Maine; and J. SCHEFFER, A. M., Hagerstown, Maryland.

Cubing, transposing, etc.,

$$(a^2 - x^2)^{\frac{1}{3}} [(a+x)^{\frac{1}{3}} + (a-x)^{\frac{1}{3}}] = (c-2a)/3, \text{ or } (a^2 - x^2)^{\frac{1}{3}} [c^{\frac{1}{3}}] = (c-2a)/3.$$